



1966 OPERATING SUMMARY

BURLINGTON

Skyway

**water pollution
control plant**

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367
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B876
1966
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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

TD
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.A56
B876
1966

Burlington Skyway : water
pollution control plant.

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ONTARIO WATER RESOURCES COMMISSION
OFFICE OF THE GENERAL MANAGER

Members of the Burlington Skyway Local Advisory Committee,
Town of Burlington.

Gentlemen:

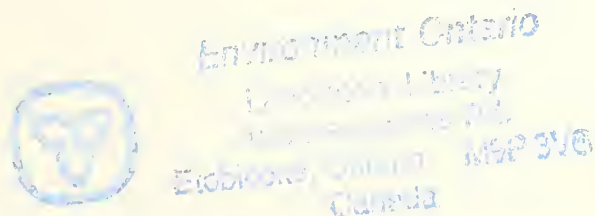
We are pleased to submit to you the 1966 Operating Summary for the Burlington Skyway Water Pollution Control Plant, OWRC Project No. 62-S-105.

It is hoped that our joint participation in efforts to combat water pollution will have even more success in the coming year.

Yours very truly,

A handwritten signature in dark ink, appearing to read "D. S. Caverly".

D. S. Caverly,
General Manager.





ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET

TORONTO 5

J. A. VANCE, LL.D.
CHAIRMAN

J. H. H. ROOT, M.P.P.
VICE-CHAIRMAN

D. S. CAVERLY
GENERAL MANAGER

W. S. MACDONNELL
COMMISSION SECRETARY

General Manager,
Ontario Water Resources Commission.

Dear Sir:

I am happy to present you with the 1966 Operating Summary for the Burlington Skyway Water Pollution Control Plant, OWRC Project No. 62-S-105.

The report offers a concise summary of operating data for the year and comparisons with previous years where these are applicable and significant.

Yours very truly,

A handwritten signature in cursive script, appearing to read "B. C. Palmer".

B. C. Palmer, P. Eng.,
Director,
Division of Plant Operations.

FOREWORD

● This operating summary contains complete information on the management of the project during 1966. It contains a concise review of the year's plant operation, significant financial details, and a visual presentation in graphs and charts of technical performance.

The information will be of value to interested parties in assessing the adequacy of the project at this time and its ability to meet future requirements.

The report is the result of co-operation by several groups within the Division of Plant Operations. These include the statistics section and the technical publications section. The Division of Finance and the draughting section of the Division of Sanitary Engineering were also closely associated with its publication.

The Regional Operations Engineer, however, has had the primary responsibility for the content, and will be happy to answer any questions regarding it.

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BURLINGTON
Skyway
water pollution control plant

operated for

THE TOWN OF BURLINGTON

by the

ONTARIO WATER RESOURCES COMMISSION

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VICE-CHAIRMAN: J. H. H. Root, M.P.P.

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COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: B. C. Palmer

Assistant Director: C. W. Perry
Regional Supervisor: D. A. McTavish
Operations Engineer: B. W. Hansler

801 Bay Street Toronto 5



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'66 REVIEW

A total of 1011.463 million gallons of sewage was treated during the year at an operating cost of \$59,744.34. The operating cost per million gallons was \$59.07 and the cost per pound of BOD removed was \$0.03.

The average daily flow during the year was 2.78 million gallons, representing 89 percent of the design capacity of the plant. Excellent BOD and suspended solids removals were effected by the plant, averaging 96.5 percent and 95.5 percent respectively. The OWRC objective of effluent BOD and suspended solids concentrations not exceeding 15 ppm was exceeded 6 percent and 42 percent of the time respectively.

During periods of high flow, the capacity of the gravity return activated sludge system was inadequate, resulting in some activated sludge being discharged with the final effluent.

Under the supervision of head office engineers, the plant staff has operated a clean, attractive and efficient plant for the Town of Burlington.

PROJECT COSTS

NET CAPITAL COST (Final)	\$1,796.884.53
DEDUCT - Portion Financed by CMHC (Estimated)	<u>1,240,059.57</u>
Long Term Debt to OWRC	\$ <u>556,784.96</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1966	\$ <u>76,730.52</u>
Net Operating	\$ 59,744.34
Debt Retirement	20,200.00
Reserve	11,795.73
Interest Charged	31,326.04
	<u> </u>
TOTAL	\$ <u>123,066.11</u>

RESERVE ACCOUNT

Balance at January 1, 1966	\$ 33,047.27
Deposited by Municipality	11,795.73
Interest Earned	<u>2,087.90</u>
	\$ 46,930.90
Less Expenditures	<u>-</u>
Balance at December 31, 1966	\$ <u>46,930.90</u>

MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	* SUNDRY	WATER
JAN	1852.28	1623.49	54.26				86.46	18.87	69.20	
FEB	3877.18	1554.30		2124.76		119.15		46.72	32.25	
MARCH	7474.79	1618.85		4195.60		91.40	86.00	197.67	1224.97	60.30
APRIL	5626.50	2516.16	150.96	2028.74		166.17	21.15	265.43	477.89	
MAY	4332.95	1298.53	207.62	2001.63		136.20		74.52	554.15	60.30
JUNE	5079.91	1724.90	398.86	1919.56	24.74	191.51	39.12	29.67	751.55	
JULY	4897.10	1639.70	574.29	1587.24		140.75		289.90	594.29	70.93
AUG	5938.40	1789.58	484.76	1583.62	1232.18	141.13	168.97	8.21	529.95	
SEPT	5161.76	2542.74	578.14	1601.70		84.19		80.10	214.59	60.30
OCT	5756.62	1792.68		1631.08		364.68		123.66	1844.52	
NOV	4913.77	1607.63		1500.43	56.40	456.18	213.41	617.49	432.08	30.15
DEC	4833.08	1666.31		1553.86		351.58	92.41	102.06	1036.71	30.15
TOTAL	59744.34	21374.87	2448.89	21728.22	1313.32	2242.94	707.52	1854.30	7762.15	312.13

* SUNDRY INCLUDES SLUDGE HAULING COSTS WHICH WERE \$5353.14

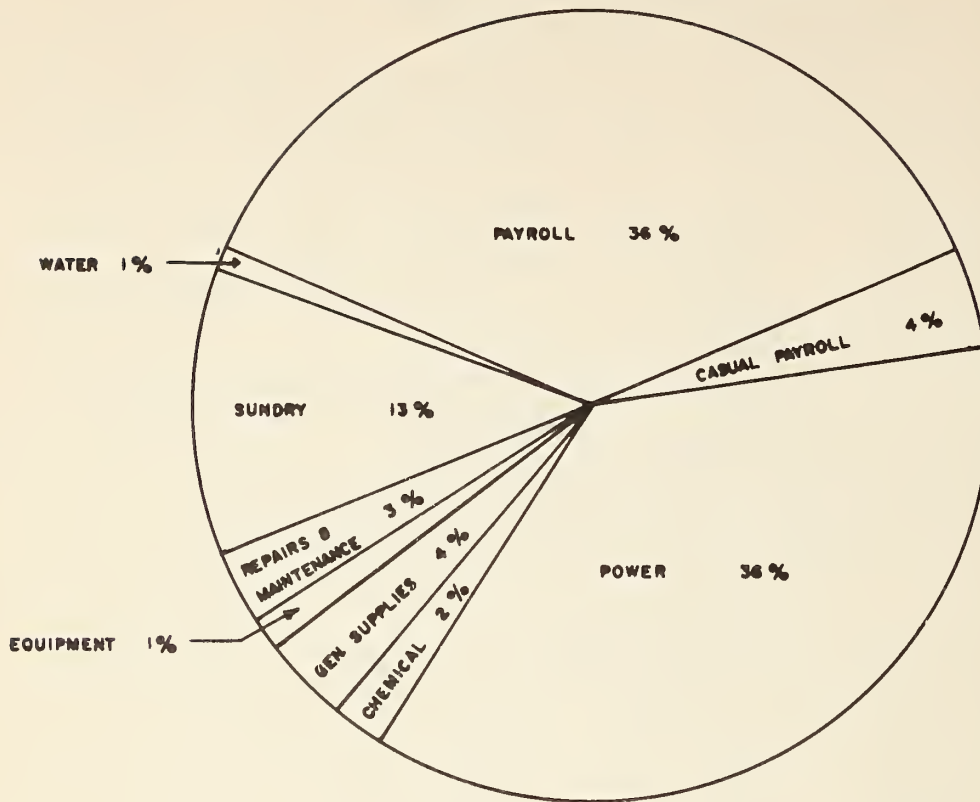
YEARLY OPERATING COSTS

YEAR	M.G. TREATED	TOTAL COST	COST PER FAMILY PER YEAR	COST PER MILLION GALLONS	COST PER L.B. OF BOD REMOVED
1964	271,006+	\$43,402.99	\$7.78	\$160.15	8 CENTS
1965	965,290	51,736.82	7.92	53.60	3 CENTS
1966	1011,463	59,744.34	8.15	59.07	3 CENTS

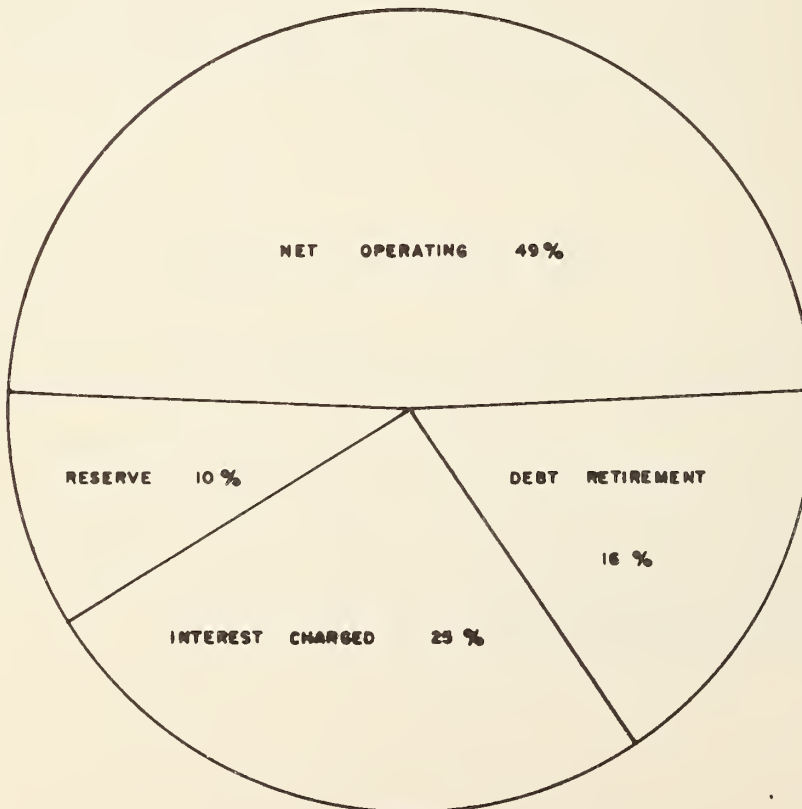
+ OPERATION FROM SEPTEMBER TO DECEMBER, 1964.

* BASED ON 3.9 PERSONS PER FAMILY AND TOTAL COST OF ALL BURLINGTON PLANTS.

1966 OPERATING COSTS



TOTAL ANNUAL COST

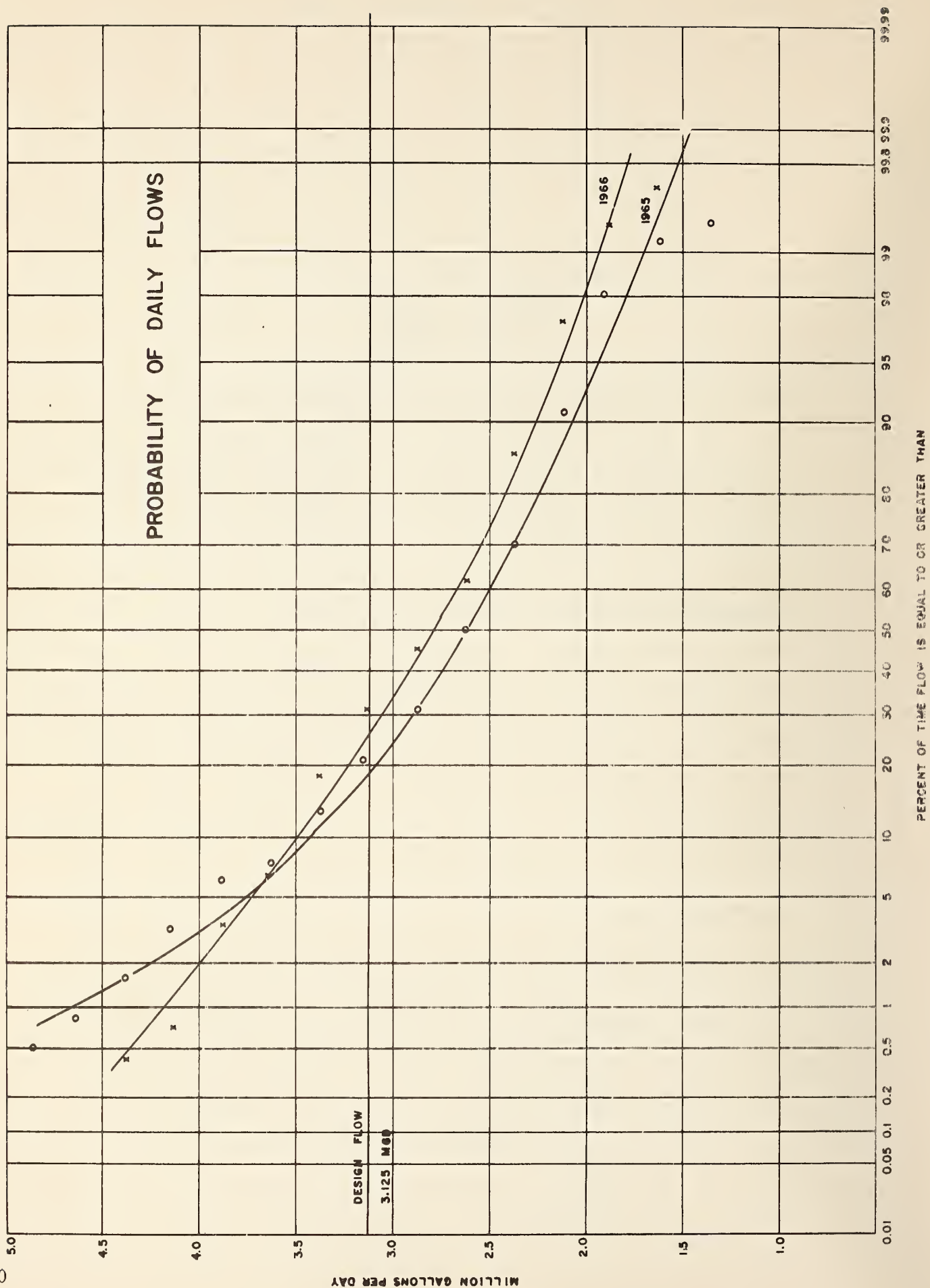


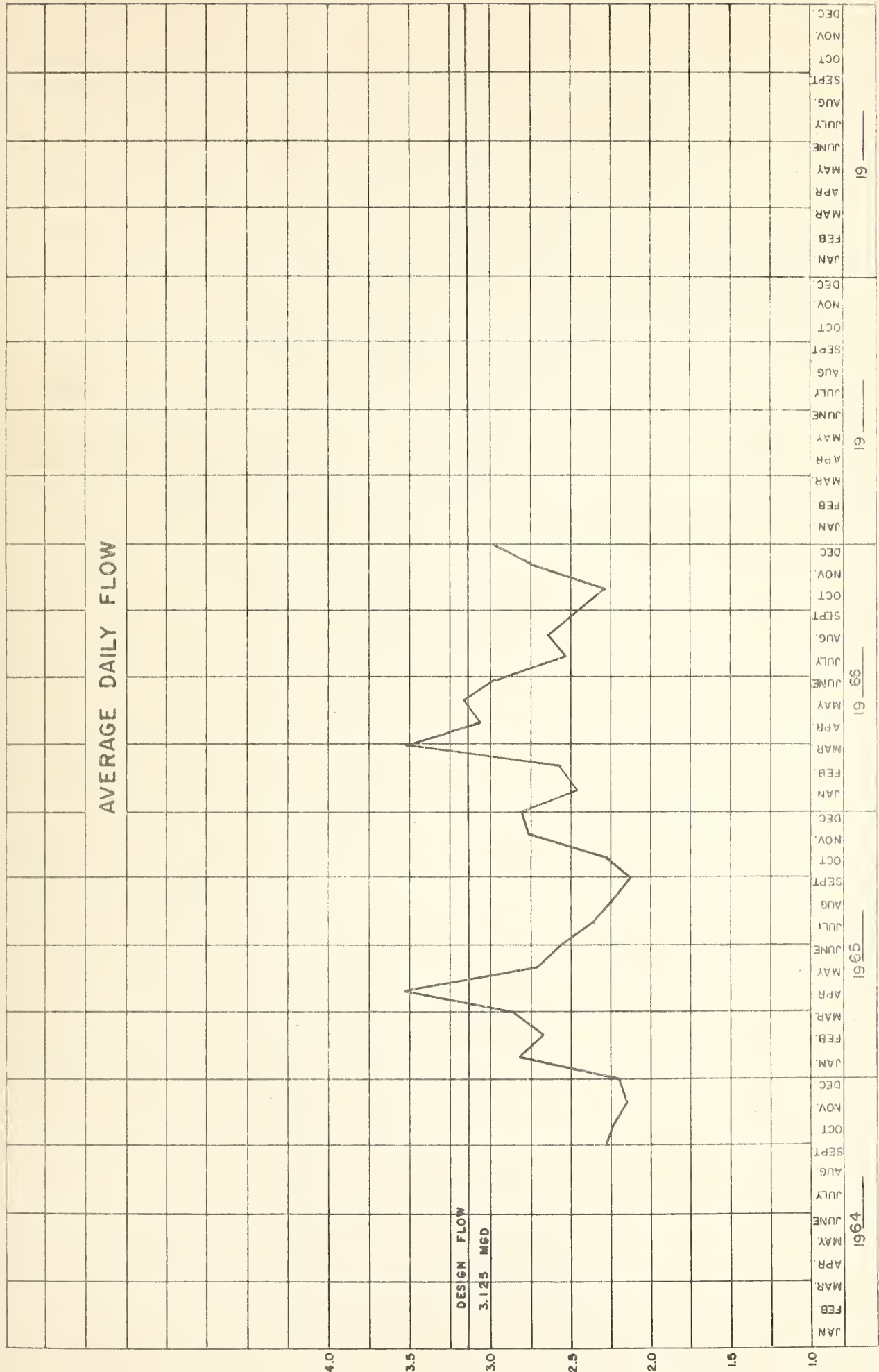
Process Data

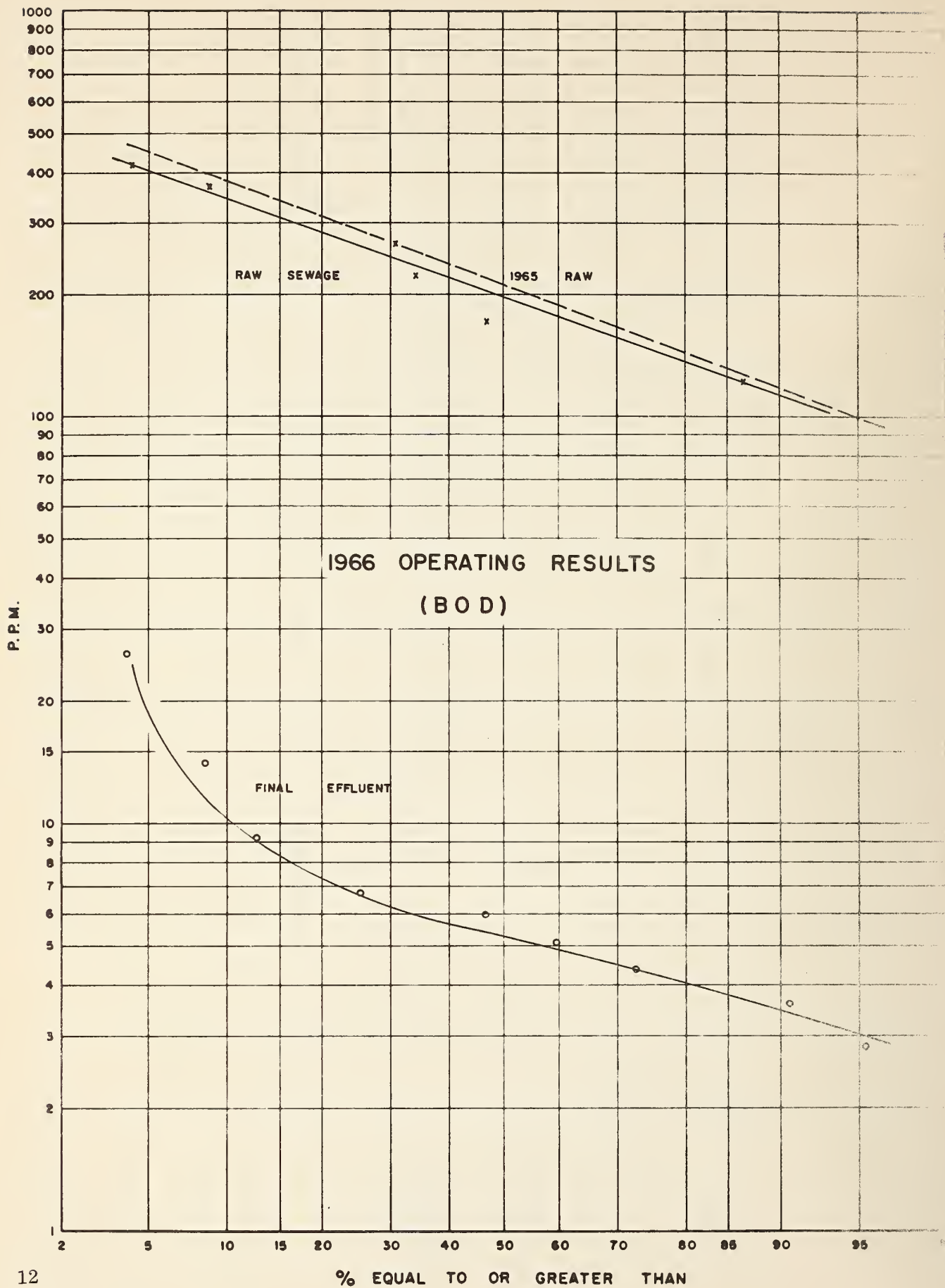
Average daily flows plotted on a probability basis and on an average per month basis can be found on the accompanying graphs.

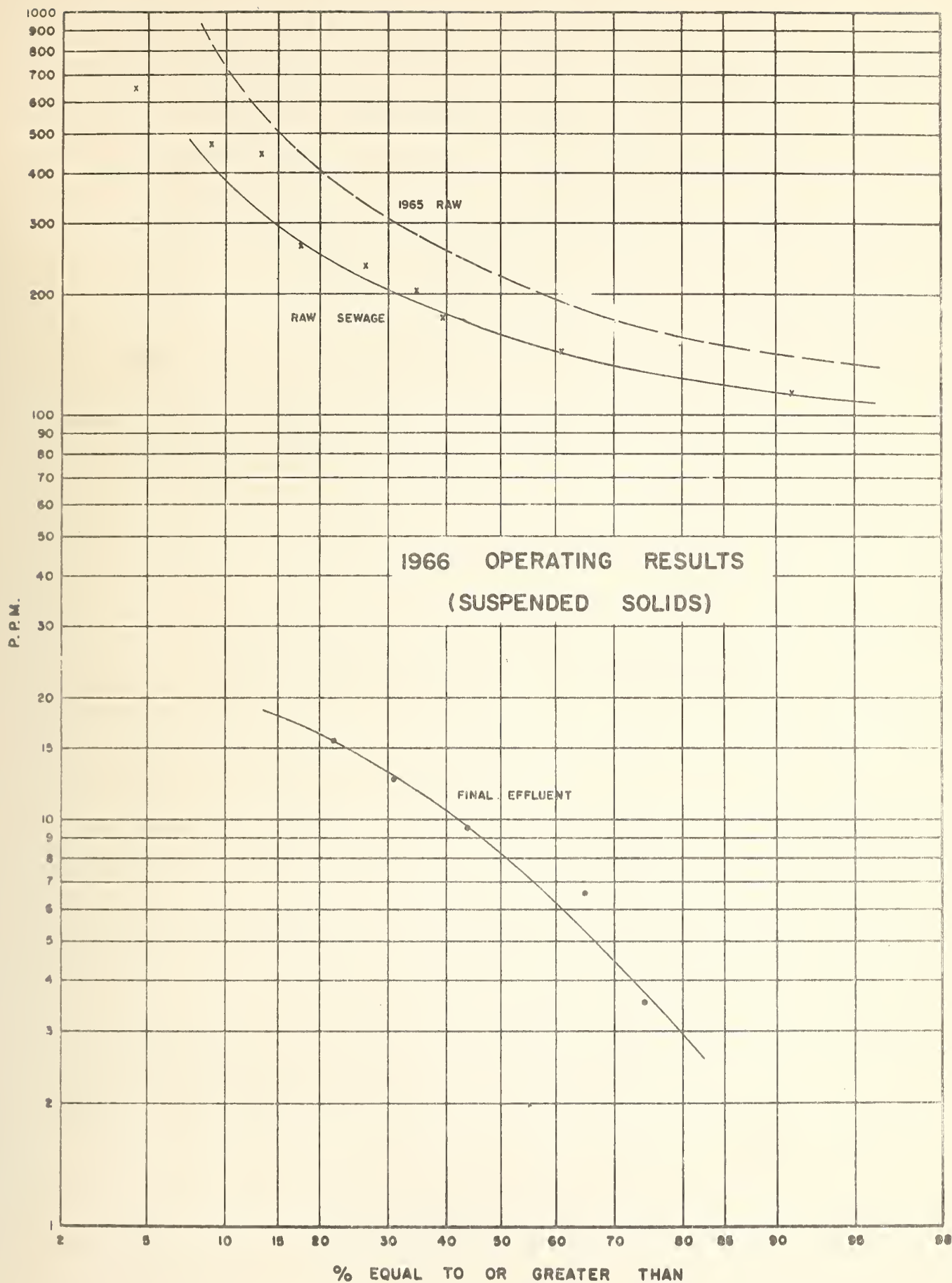
The average daily flow during the year was 2.78 million gallons. The maximum and minimum average daily flows, averaged on a monthly basis occurred in March and October and were 3.58 and 2.37 respectively. The design flow of 3.125 million gallons per day was exceeded 26 percent of the time.

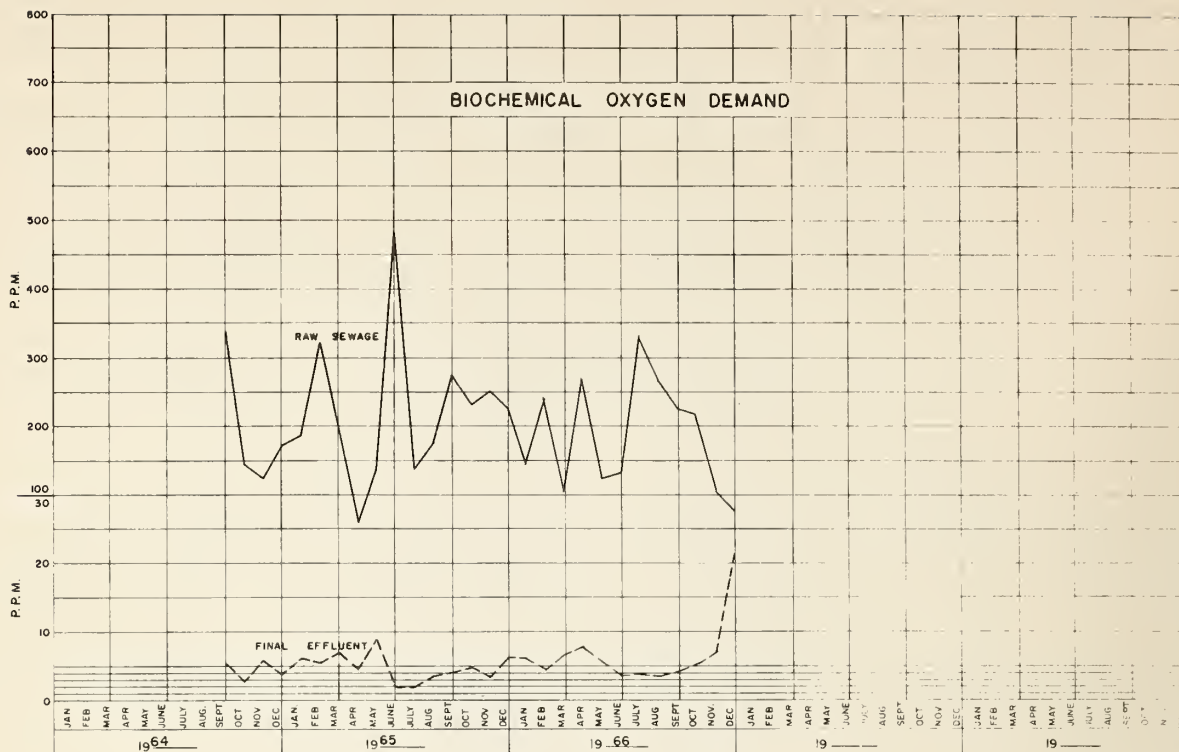
During the year a total of 1011.463 million gallons of sewage composed of both domestic and industrial wastes received treatment.



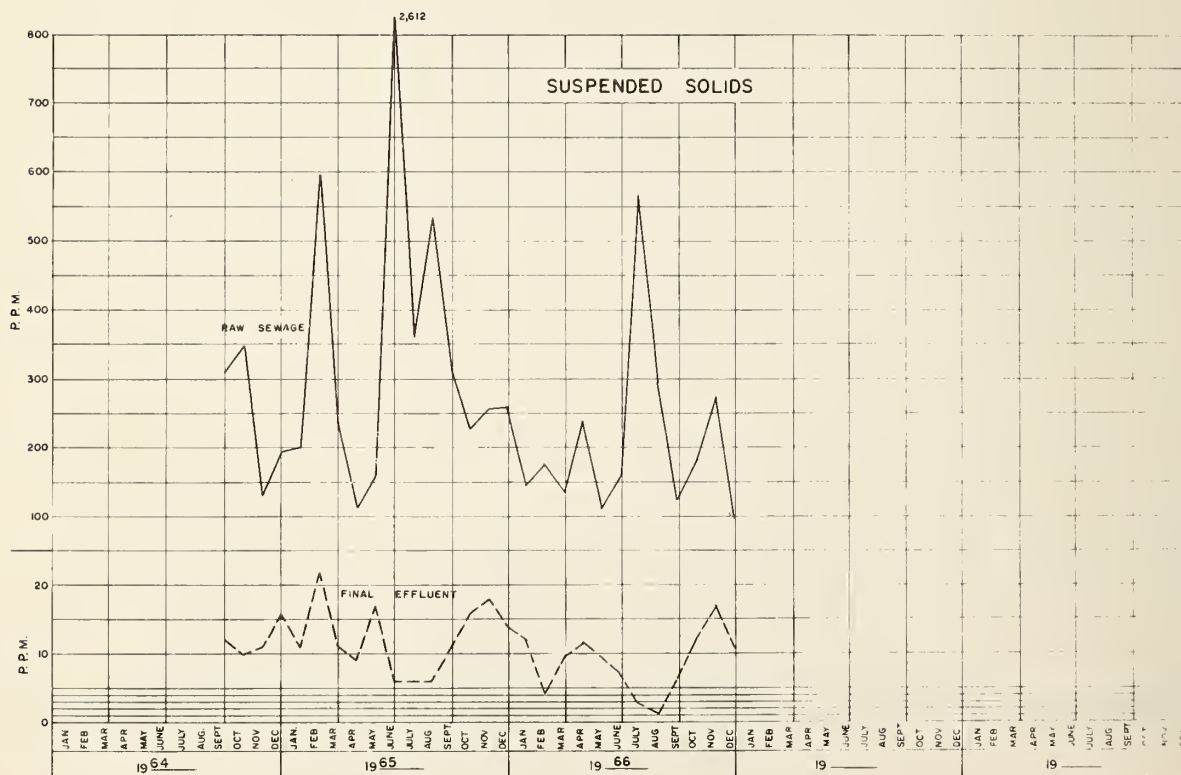








MONTHLY VARIATIONS



GRIT, B.O.D AND S.S. REMOVAL

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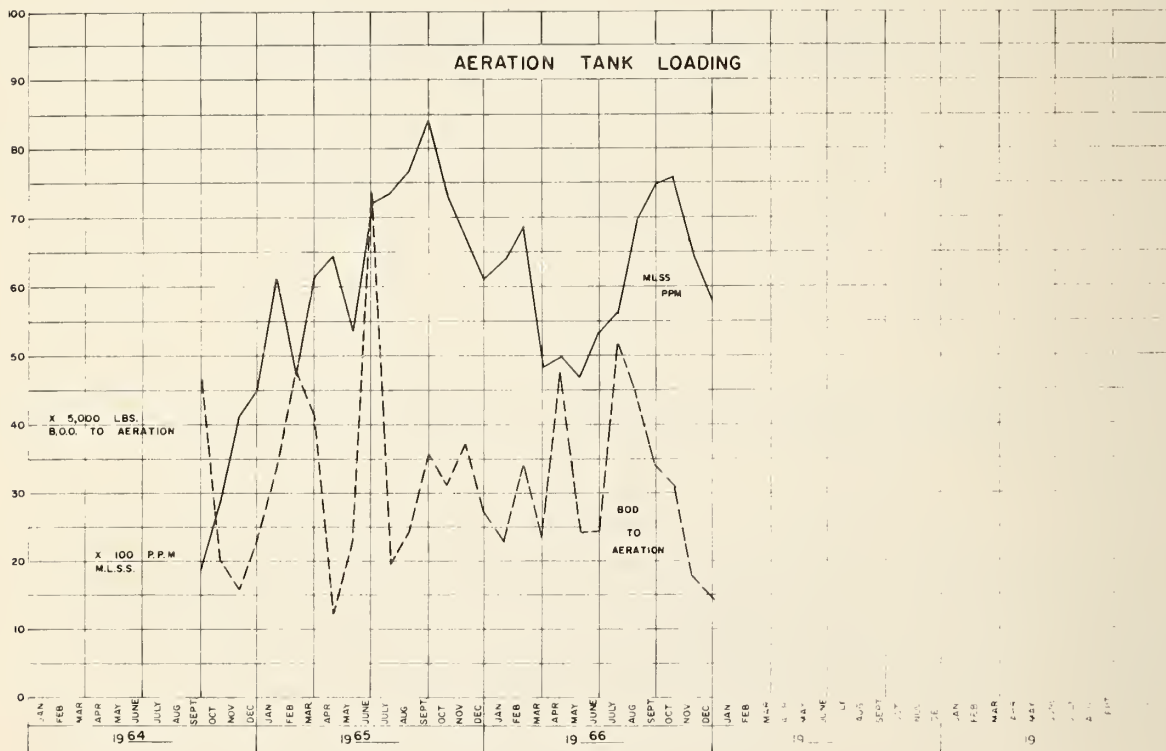
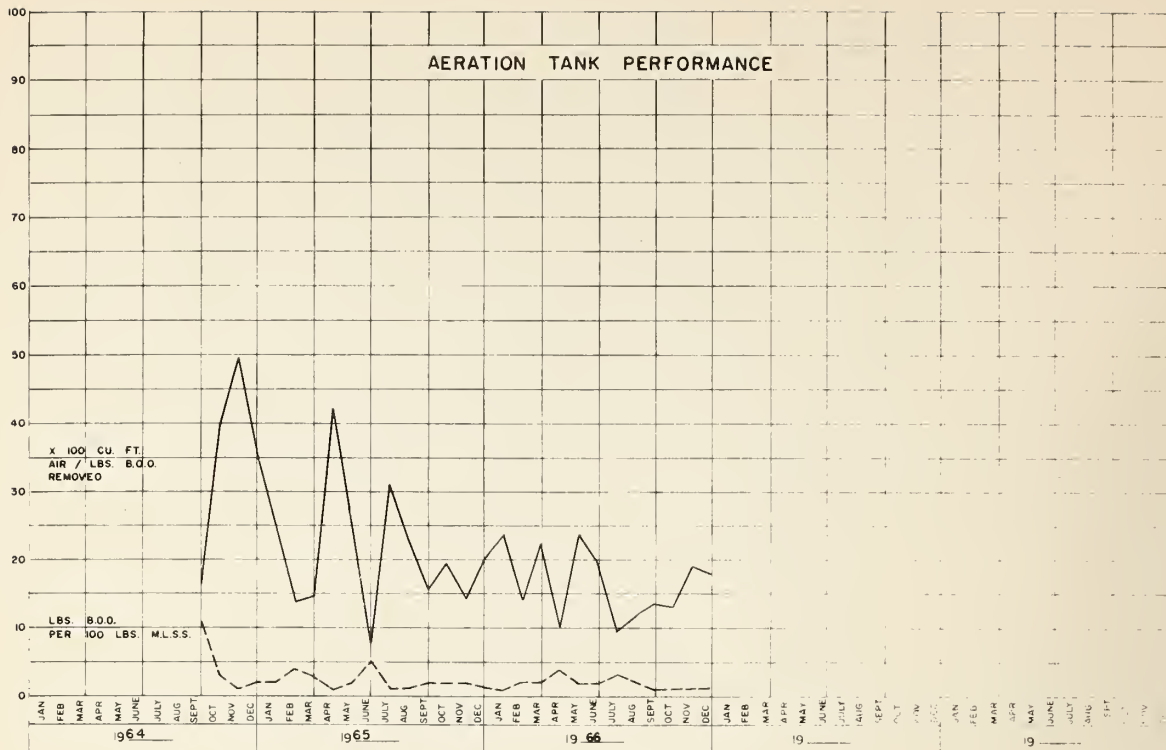
MONTH	B. O. D.				S. S.				GRIT REMOVAL CU. FT.
	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	INFLUENT PPM.	EFFLUENT PPM.	% REDUCTION	TONS REMOVED	
JAN.	149	6	96.0	54.3	143	12	91.5	49.7	290
FEB.	235	4.3	98.0	82.5	175	4	97.5	61.2	290
MAR.	106	6.4	94.0	53.4	135	9	93.0	67.5	350
APR.	262	7.6	97.0	116.4	234	12	95.0	101.6	350
MAY	112	6	94.5	51.7	112	10	91.0	49.8	260
JUNE	136	3.4	97.5	58.7	156	7	95.5	66.0	300
JULY	332	4	98.5	128.4	566	2	99.5	220.9	100
AUG.	269	3	99.0	108.9	282	1	99.5	115.1	40
SEPT.	227	4	98.5	82.3	124	6	95.0	43.6	260
OCT.	218	5	97.5	75.7	187	12	93.5	62.2	138
NOV.	108	7	93.5	41.2	270	17	93.5	103.1	270
DEC.	78	21	73.0	26.4	93	11	88.0	37.9	245
TOTAL	-	-	-	910.3	-	-	-	996.3	2893
AVG.	186	6	96.5	75.9	206	9	95.5	83.0	241

COMMENTS

Average suspended solids and BOD concentrations for both raw sewage and final effluent are plotted on a probability basis and on an average per month basis on the accompanying graphs.

The average raw sewage BOD and suspended solids concentrations were 186 ppm and 206 ppm respectively. The design raw sewage BOD and suspended solids concentration of 200 ppm were exceeded 52 percent and 32 percent of the time respectively. The plant afforded excellent treatment transferring to Hamilton Bay an effluent with an average BOD and suspended solids for the year of 6 ppm and 9 ppm respectively. The average BOD and suspended solids reduction efficiencies were 96.5 percent and 95.5 percent respectively.

A total of approximately 2893 cubic feet of grit was removed during the year.



AERATION SECTION

MONTH	* B.O.D. PPM.	MLSS. PPM.	LBS. BOD. PER 100 LBS. M. L. S. S.	CUBIC FEET AIR PER LB. BOD. REMOVED
JANUARY	149	6364	1	2330
FEBRUARY	235	6824	2	1411
MARCH	106	4808	2	2258
APRIL	262	4978	4	1021
MAY	112	4632	2	2348
JUNE	136	5319	2	1976
JULY	332	5569	3	972
AUGUST	269	6941	2	1201
SEPTEMBER	227	7494	1	1356
OCTOBER	218	7595	1	1300
NOVEMBER	108	6417	1	1904
DECEMBER	78	5745	1	1802
TOTAL	--	--	--	--
AVERAGE	186	6057	2	1657

* Raw BOD- No primaries

COMMENTS

Average aeration tank performance parameters can be found plotted on a per monthly basis on the accompanying graphs.

The average pounds of BOD per 100 pounds of MLSS ratio of 2 was within the acceptable range of 1 to 5 for good extended aeration plant operations

SLUDGE HAULED
(1,000's cu. ft.)

<u>Month</u>	<u>1000's cu. ft.</u>	<u>Month</u>	<u>1000's cu. ft.</u>
January	-	July	23.60
February	16.77	August	0.31
March	22.11	September	15.52
April	24.06	October	14.28
May	30.74	November	17.39
June	15.21	December	20.80
Total		200.79	
Average		16.73	

COMMENTS

To maintain acceptable MLSS concentrations in the aeration section, a total of 200,790 cubic feet of activated sludge was hauled from the sludge thickening tank.

CHLORINATION

MONTH	PLANT FLOW (MG)	POUNDS CHLORINE	DOSAGE RATE (PPM)
JANUARY	75.951	-	-
FEBRUARY	71.563	-	-
MARCH	107.191	-	-
APRIL	91.541	-	-
MAY	97.557	* 1402	2.62
JUNE	88.546	2909	3.28
JULY	78.327	3196	4.08
AUGUST	81.909	2940	3.59
SEPTEMBER	73.817	2854	3.87
OCTOBER	71.058	* 1514	3.88
NOVEMBER	81.490	-	-
DECEMBER	92.513	-	-
TOTAL	1011.463	14815	-
AVERAGE	84.289	2469	3.57

* 17 days of chlorination.

COMMENTS

The final effluent was chlorinated for disinfection purposes between May 15 and October 15. An average dosage rate of 3.57 ppm was necessary to maintain a chlorine residual of not less than 0.5 ppm.

CONCLUSIONS

The average BOD and suspended solids removals were 96.5 percent and 95.5 percent respectively which indicates the plant afforded excellent efficiency in treating the sewage. Throughout the year the plant staff operated a clean, attractive and efficient plant for the Town of Burlington.

RECOMMENDATIONS

The flows received at this plant are approaching the design value of 3.125 mgd, averaging 2.78 mgd. Consideration should be given to expansion of plant facilities, particularly the return activated sludge system.

Date Due

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367
.A56
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pollution control plant.
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